

THERE IS CLAIMED:

1. A method of updating the clock bias between the common clock of the satellites of a radio navigation satellite system and the clock of a radio station of an asynchronous cellular radiotelephone system including a mobile device including a radio navigation satellite system receiver for receiving satellite data supplied by at least four satellites and an assistance server for improving the acquisition of satellite data by said mobile device,
said method including the following steps:
 - said mobile device receiving said satellite data,
 - said mobile device calculating pseudodistances between itself and said satellites,
 - encapsulating said pseudodistances with the time at which said pseudodistances are calculated,
 - transmitting said pseudodistances and said time at which said pseudodistances are calculated in the form of a radio signal from said mobile device to said assistance server via said radio station, and
 - said assistance server determining the position of said mobile device and estimating the clock bias between the common clock of said satellites and the clock of said radio station using said pseudodistances and said time at which said pseudodistances are calculated.
2. A method according to claim 1, wherein said time at which said pseudodistances are calculated corresponds to time information supplied by said radio station.
3. A method according to claim 1, wherein said time at which said pseudodistances are calculated is the time according to the clock of said mobile device at which said pseudodistances are calculated, said method including the following steps:
 - said mobile device inserting into said radio signal the time it sends said radio signal,
 - said radio station inserting into said radio signal the time it receives said radio signal,
 - said assistance server determining a first clock bias between the clock of said mobile device and the common clock of said satellites,

- said assistance server estimating a second clock bias between the clock of said mobile device and the clock of said radio station by establishing the difference between said sending time and said receiving time, and
 - deducing the clock bias between said common clock of said satellites and said clock of said radio station by establishing the difference between said first and second clock bias values.
4. A method according to any one of the preceding claims, wherein said clock bias between said common clock of said satellites and said clock of said radio station is stored in an update database.
 5. An assistance server for improving the acquisition of satellite data by a mobile device, said server including a database for the clock bias between the clock of the radio stations of an asynchronous cellular radiotelephone system and the common clock of the satellites of a radio navigation satellite system.
 6. An assistance service according to claim 5, wherein said clock bias values are updated by a method according to any one of claims 1 to 4.
 7. A method of improvement by an assistance server of the acquisition of satellite data by a mobile device including a radio navigation satellite system receiver in an asynchronous cellular radiotelephone system, said method including the following steps:
 - said mobile device sending an assistance request to said assistance server via a radio station associated with it, and
 - said server identifying the clock bias between the common clock of the satellites and the clock of said radio station as updated by an updating method according to any one of claims 1 to 4.
 8. A method according to claim 7 including a step of said assistance server transmitting assistance data including:
 - time information associated with said radio station extracted from the clock bias between the common clock of the satellites and the clock of said radio station as updated by said updating method, and
 - the time of the common clock of the satellites extracted from the clock bias between the common clock of the satellites and the clock of said radio station as updated by said updating method.
 9. A method according to claim 8, wherein said time information

associated with said radio station is transferred as a reference time of the BTS radio signal in the form of hyperframe, superframe and multiframe references and a bit number, and the time of the common clock of the satellites is associated with said BTS reference date.

10. A method according to claim 7 including the following steps:
 - said assistance server transmitting assistance data including a clock bias between the common clock of the satellites and the clock of said radio station as updated by said updating method, and
 - said radio station inserting into a radio signal sent to the mobile device the time said radio station sends said radio signal.
11. A method of calculating the position of a mobile device including a radio navigation satellite system receiver in an asynchronous cellular radiotelephone system, said method including the following steps:
 - an assistance server improving the acquisition of satellite data by said mobile device by a method according to any one of claims 7 to 10,
 - said mobile device acquiring said satellite data,
 - said mobile device calculating pseudodistances between said mobile device and the satellites from said satellite data, and
 - said assistance server or said mobile device determining the position of said mobile device.
12. A mobile device of an asynchronous cellular radiotelephone system including a radio navigation satellite system receiver and means for determining the position of said mobile device by the method according to claim 11.
13. A method of updating the clock bias between the common clock of the satellites of a radio navigation satellite system and the clock of a radio station of an asynchronous cellular radiotelephone system including a mobile device including a radio navigation satellite system receiver for receiving satellite data supplied by at least four satellites and exchanging a radio signal with said radio station and an assistance server for improving the acquisition of satellite data by said mobile device, said method including the following steps:
 - said mobile device receiving said satellite data,
 - said mobile device calculating pseudodistances between itself and said satellites, and

- said mobile device determining its position and estimating the clock bias between the common clock of said satellites and the clock of said radio station using said pseudodistances and said time at which said pseudodistances are calculated, said time at which said pseudodistances are calculated corresponding to time information supplied by said radio station.